Distributed Parallel Operating System Software Needs

- **Desire to integrate order 1000 computing nodes into a single, effective, multi-user system**
- **Balanced 10–20 TFLOPS system in 2000**
- **Desire for standardized system image to users**
- **Integrated system-wide resource allocation and management**
  - **User authentication, resource authorization, fault detection, fault isolation, efficient access to interconnects, standards beyond message passing and shared memory, etc.**

Example Area of Interest

Adapt and develop a scalable, portable, distributed parallel OS architecture and software

- **Sits on top of the operating systems of the individual nodes (computers)**
- **Standard OS API (standard hooks) defined and supported by multiple sources in individual node's OS**
- **Scalable to 100s to 1000s of nodes**

Particular OS API Areas of Interest

- **Data movement protocols adaptable to interconnect fabric**
- **Fault tolerance mechanisms for system reliability**
- **Accelerators of application-level APIs (e.g. MPI and POSIX threads)**
- **Mechanisms to improve system area resource management (control all CPUs, memory, disks)**
- **Mechanisms to improve security of data and user access**